

# USER GUIDE

## MDM Network Ready Laptop Cart



Cut Here - Finished size = 16" W x 11" H - Folded three times, like a map

### MDMLAP20NR

20 Laptop Computers in Vertical Slots

#### Maximize your Tech Investment

The MDM Network Ready Laptop Cart provides you the infrastructure to secure, charge and update 20 computers.

The cart ships fully assembled with:

- 21 Ethernet cables pre-wired and ready to plug into your laptops
- Dedicated space for your 19" rack-mounted network switch
- Two thermally-controlled fans to dissipate heat while your computers are updating

Save time and money by sending patches, updates and content to all of the devices in the cart at once.

# Touchboards

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## Power Management System ... The "Power Manager"

- The MDM Laptop Cart features the **new and improved Power Manager**, which is designed to continuously charge even the most power hungry laptops using only one wall outlet.
- The system uses a "Round Robin" charging cycle that constantly evaluates the demand for power and allows each electrical strip time to cool down. **Cooler batteries last longer**, and extended battery life saves you money.
- When the total draw of the devices allows it, the **Network Switch** will turn on automatically and receive continuous power until the unit is powered off.
- Two **Heat Sensors** inside the cart communicate the internal temperature to the Power Manager. When it exceeds 77°F the fans will turn on and if it gets above 100°F the system will stop sending power until the cart cools down.

The "Power Manager" has two LED indicator lights that let you know what it is happening  
The left light is Amber and the right one is Red

**What is the "Power Manager" doing?**

#	Amber Light	Red Light	Meaning
1	On	On	Start-Up
2	Off	Off	Self-Test
3	On	Off	Smart Charge Mode
4	Off	Off	All Charge Mode

**Please Note: It is recommended that nothing be plugged into the Auxiliary outlet while charging**

**Basic Troubleshooting**

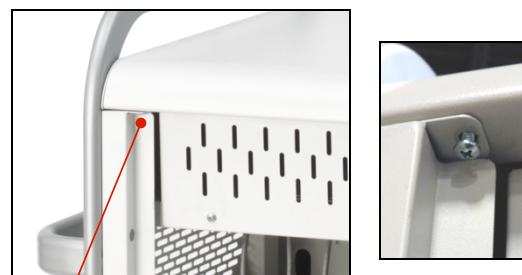
#	Amber Light	Red Light	Meaning	Solution
1	Single Blinks	Off	Auxiliary Drawing Too Much Power	Unplug Auxiliary
2	Single Blinks	Single Blinks	One Set Drawing Too Much Power	Turn Off & Back On
3	Double Blinks	Off	Internal Temp of Cart Too High	Open Doors/Move Cart

1. When the power button is switched to the "On" position, both indicator lights will light up for approximately 2 seconds.
2. Both lights will then turn off while the "Power Manager" evaluates the power required to charge the first set of devices.
3. The Amber light will come on and stay lit indicating that the "Power Manager" is now in "Smart Charge" mode. This means that laptops will be charged in groups, three minutes at a time.
4. Once the power needed to charge all of the devices in the cart reaches a level that will not trip the circuit, the "Power Manager" enters "All Charge" mode and both lights will be off. All devices are now charging.

## Adding your Network Switch Upon Delivery

The MDMLAP20NR Laptop Cart has space in the top for the addition of your network switch. Below are step by step instructions for installation of the network switch.

- Lock the two locking wheel casters to prevent the unit from moving.
- Open front door of the cart and remove the 2 Phillips screws from upper right and upper left corners on front side of cart, with narrow handled screwdriver. (see pictures below)



- Open the rear door of the cart and remove the 2 Phillips screws from upper right and upper left corners on rear side of cart.
- Lift off top cover.
- Set (purchaser provided) rack mounted network switch on provided shelf and attach with 4 Phillips rack mount screws.



- If preferred, connect the LAN cables to the switch before replacing top cover.
- Plug your network switch into the dedicated outlet located on the rear of the power manager.
- Replace the top cover and screw in the 4 Phillips screws in front and back corners.



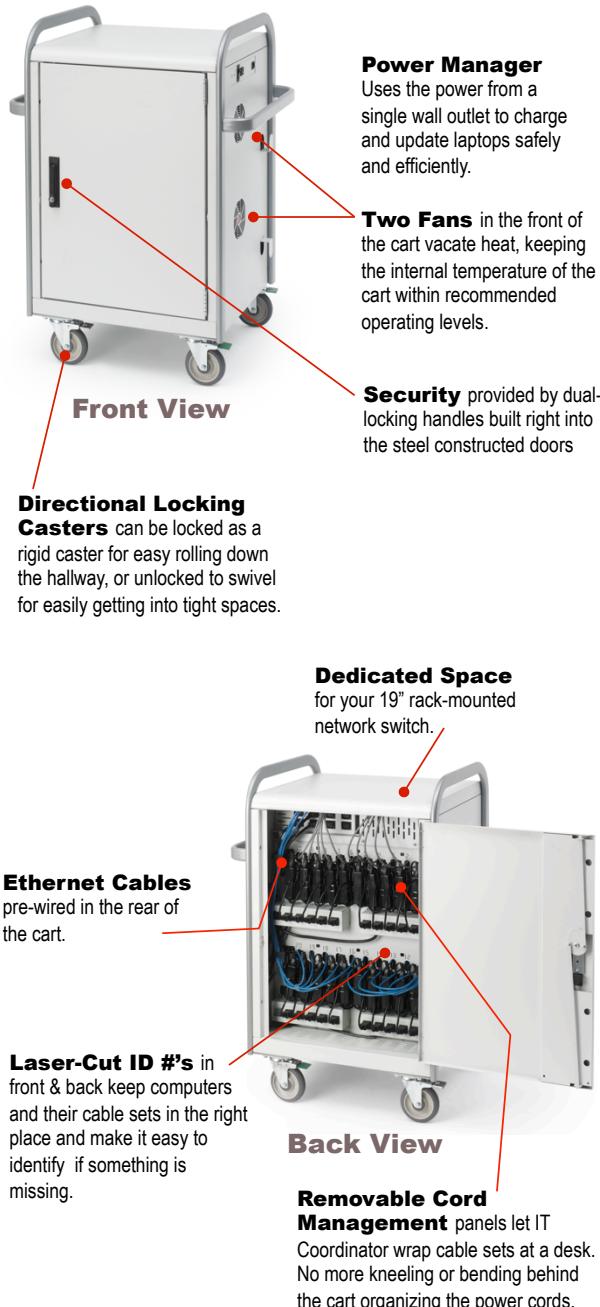
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- ELECTRICAL:** Avoid sparks. Avoid arcing **Always turn OFF the power to the cart before plugging IN or OUT!**  
**ELECTRICAL:** For Safety Purposes, make sure all electrical components do not exceed the maximum load rating of 12 amps.  
**ELECTRICAL:** Risk of electrical shock. Do not plug the power cord into another extension cord or relocatable power tap.  
**ELECTRICAL:** The power strips inside the laptop cart are only for charging laptop computers. Any other use may cause an overload for the Power Management System, causing the "Power Manager" to shutdown. To reset the "Power Manager", turn off the main power switch, unplug the non-laptop device, then turn the main switch back on.



- CAUTION:** Be sure each laptop computer is turned OFF before plugging into the cart.  
**CAUTION:** Do Not block the ventilation holes or fans on the cart. Proper air flow is required for safe operation of equipment.  
**CAUTION:** Cart with computers should be kept in a room with a maximum temperature not to exceed 77° F or 25° C.  
**CAUTION:** Maximum weight of accessories on top of cabinet is 25 pounds.  
**CAUTION:** Avoid loading equipment in the cart in an uneven fashion. Uneven weight distribution could cause a hazardous condition.

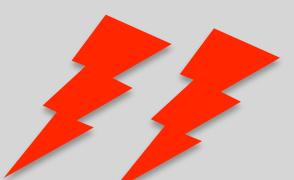
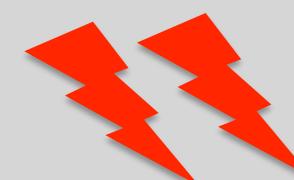


### How Does the Network Ready Cart Manage Heat?

When computers are charging, the source of heat is the adapter/transformer. However, when they are receiving updates from your network, the computers must be powered on meaning the source of the heat inside the cart is the computers' ventilating themselves to keep their internal batteries cool. The air emitted from each computer is very hot and with all 20 laptops ventilating at once, the internal temperature of the cart rises dramatically while they are updating.

Computer manufacturers recommend a safe temperature range of 50°F to 95°F for operating laptops. To keep the internal temperature of the cart within these limits, the MDM Network Ready Laptop Cart features ventilation on the side panels and is equipped with two thermally-controlled fans that turn on when the temperature inside the cart exceeds 77°F. Bretford has conducted extensive testing that confirms the effectiveness of these features.

## For Best Results When Using the Networking Functionality, We Recommend that All of the Computers in the Cart be Fully Charged



### Networking with the Power Manager

When the Power Manager has moved through all of power modes described in the blue box on the reverse side of this guide, the power required for all six power strips will be below 10 amps and **the network switch will be powered on**. Once on, the network switch will **ALWAYS** receive power until the Power Manager is manually turned off.

If the combined draw of the power strips and network switch exceeds 10 amps, the cart will revert to "Smart Charge" mode. The network switch will continue to get power but some computers will be running on battery power every three minutes as the Power Manager redistributes the current.

Note that if the computers are updated remotely, they must be receiving AC power to receive a "wake up" packet. Therefore, when using Wake-On LAN we recommend the computers be "**awakened**" in stages to prevent the Power Manager from reverting to "Smart Charge" mode. For example, the "wake-up" packet would be sent to the computers in slots 1-5; once they are on, the packet would be sent to the computers in slots 6-10 and so on, until all 20 devices are powered on.

Since computers can receive updates while operating on battery power, the update can now be sent to all 20 of them at once. If the computers are powered on manually, updates can be sent to the entire cart simultaneously.

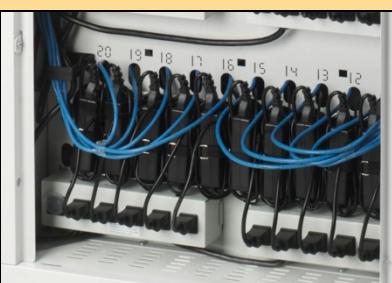
**Network updates sent to computers using the MDMLAP20NR are the responsibility of your IT Department. The information above explains how the Power Manager will potentially affect these efforts and all recommendations are based on results of Bretford's internal tests.**

### Cable Management ... Done at your Desk!

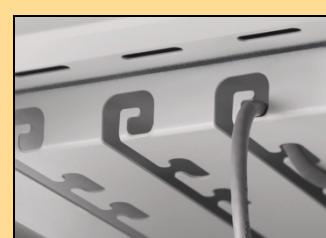
The "Desktop" Cord Management system allows you to organize the computer cord sets while seated at a table. No more bending or kneeling behind the cart!! Simply remove the four steel panels, secure the adapters with the Velcro straps, and re-hang them in the rear of the cart.



Be sure to leave enough slack at both **ends** of the power cord to be able to plug one end into the power strip and pass the other end through the divider panel to the front of its assigned storage slot. Use the **Laser Cut ID Numbers** to quickly match computers with their cord sets.



The MDM Network Ready Laptop Cart ships with **20 Ethernet cables** pre-wired in the rear of the cart. One end will be routed to the dedicated space for your network switch and the other end will be threaded through the divider panel into the cable management channel in the front section of the cart.



The **cable management channel** includes a cut-out designed to hold the Ethernet cable and power cord in place. Place the power cord on top of the Ethernet cable and loop it into the "notch" and over the hook at the front.



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